



## **Supporting Mobile PC Users**

### **Intel IT's model for cost-effective onsite support**

By developing local client support depots, known as PC Service Centers, Intel IT more than doubled technician productivity and also raised the level of customer service satisfaction. Intel employees can drop off notebook computers at the centers for on-the-spot repairs, pick up replacement systems, and attend classroom training. The new model saved Intel more than \$1 million in PC deployment costs in 2003.

June 2004

## Executive Summary

Intel IT moved from a traditional deskside support model for employee PCs, to a centralized depot where employees come for computer repairs, training, and to receive new computers. Our PC Services Center model saved Intel more than \$1 million in PC deployment costs, quadrupled technician productivity, and increased customer satisfaction.

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Developed by our Global PC Services (GPCS) group, the centers primarily serve notebook computer users, letting them drop off mobile computers for repair at their convenience. Technicians can service multiple machines at the same time, instead of traveling to a user's cubicle and servicing systems individually. The result is that we've:

- Doubled our repair ticket resolution.
- Increased technician productivity by three to four times.
- Streamlined our parts inventory and reduced the volume of basic calls to our help centers.

Since we launched the project in the fall of 2000, we've opened 47 service centers around the world. By the end of 2004, our employees and contractors will be able to find a PC Service Center at every major Intel site in the world.

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## Background

Traditionally, Intel IT has offered its customers—Intel employees and other onsite workers—deskside technical support. A technician responded to a trouble call by scheduling an appointment and visiting the customer at his desk.

By 2000, however, we knew that method had drawbacks, as evidenced by flat performance and customer satisfaction numbers. Traditional process changes delivered little improvement in scores, and repair times fluctuated wildly.

We saw that deskside technical support could be inefficient. At some Intel sites, for example, technicians spent significant time in scheduling appointments by phone and moving from customer to customer. If the technician needed a less common part, he was forced to waste time going back for it.

That same year, Intel management also asked us to reduce expenses. We were determined to meet that goal while simultaneously improving service to our customers—Intel employees and onsite contractors. In September, we met with our outside service provider to build this strategy.

We wanted to shorten the time it took to repair a customer's failed system to an average of two hours. But it quickly became apparent that—given current performance and the scarcity of resources—drastically reducing repair time would require a completely new approach.

Analyzing the problem, we discovered two things:

- Intel's Americas employees were highly mobile; at the time about 60 percent used notebook computers at least part-time.
- Notebook computers accounted for the majority of failures and repair requests we received for client systems; about 60 percent of all repairs were being done on notebooks.

In response, our Global PC Services (GPCS) team devised a novel strategy: Instead of going to the customer's desk, bring the customer to the repair service. By converting standard office cubicles into local repair and training depots, employees could obtain high levels of service. And by abolishing appointments and instead opting for a first-come, first-serve system, customers wouldn't need to wait for an available appointment slot but instead drop in at their convenience. A single technician could process multiple systems concurrently, with all the parts at hand.

We also decided that if a PC needed to be transported to the service center, we could substitute a less expensive worker for collection and delivery. That allowed us to keep skilled technicians focused on client support.

## Phased Introduction Strategy

Rather than convert all PC repair activity immediately to the service centers, we introduced the new concept in four phases, beginning with a few sites (see Figure 1 on the next page for the progression of site rollouts throughout Intel).

### Phase 1: Quick Fixes

We first tested the new "PC Cubes" concept on a relatively simple repair area—quick fixes by field technicians. The new service centers began by distributing user-exchangeable notebook parts including:

- Notebook batteries
- Network interface cards (NICs)
- Network dongles
- Port replicators
- 3.5-inch drives
- CD/DVD drives
- AC adapters
- Standard mice and keyboards

### Phase 2: Diagnostic Services

In the second phase, we offered a diagnostic service called the Laptop Health Check—diagnostic routines to improve notebook performances or identify potential problems before they became serious. The health check tests included:

- Archiving e-mail files
- Scanning and defragmenting disks
- Updating virus definition files
- Updating drivers and the BIOS
- Performing battery diagnostics

### Phase 3: Notebook Repairs

In the third phase, we added notebook repairs, ensuring that technicians had all the necessary parts to perform the same notebook repairs as their deskside counterparts:

- Hot-swapping notebook systems
- Hard drive replacement
- Data migration
- Operating system rebuilds

### Phase 4: Customer Classes

Now we added customer classes to our service centers. A single technician in a classroom environment can deploy new PCs to 12 customers at once, while at the same time providing useful productivity training.

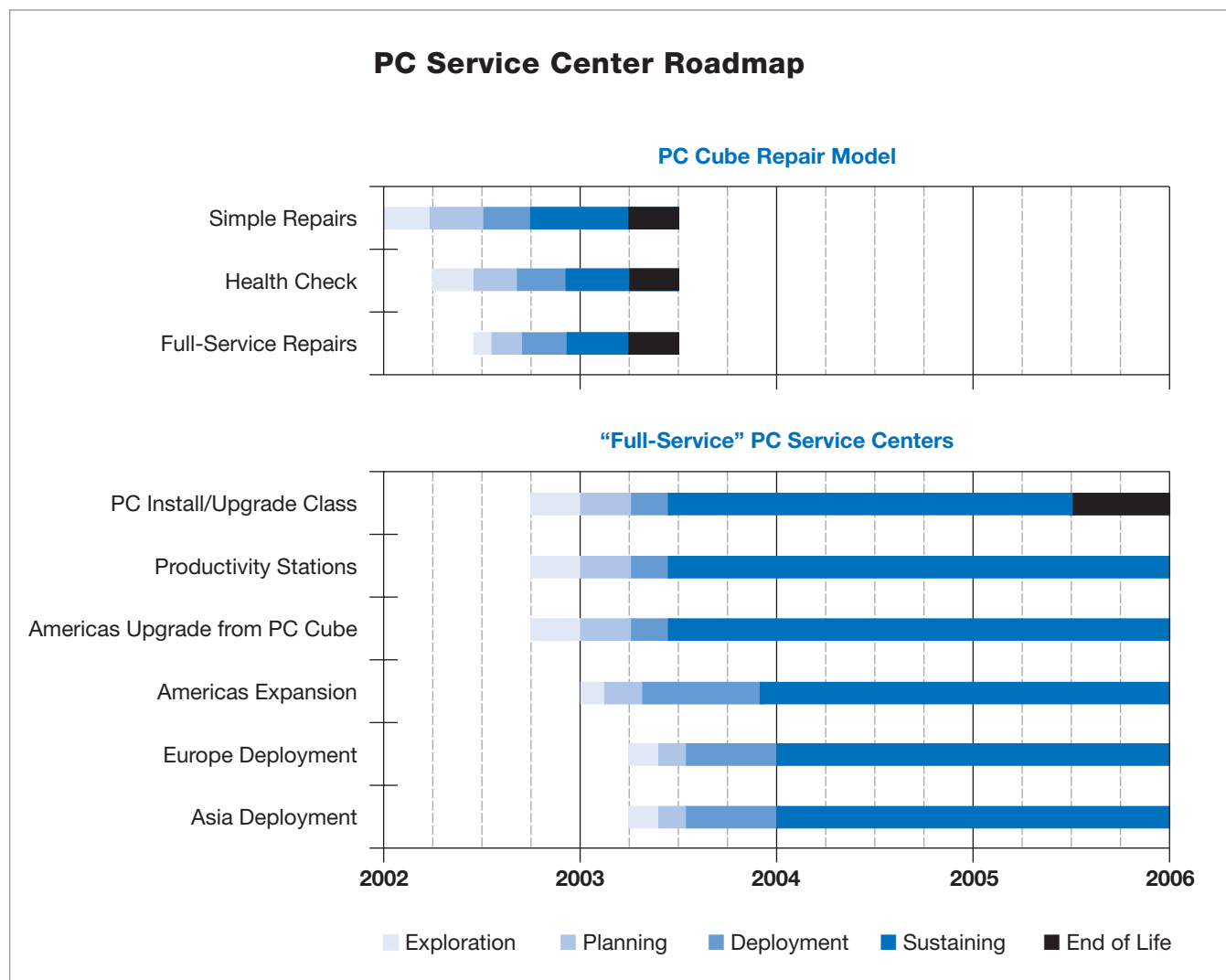
We also added PC productivity stations to the centers, allowing customers to access e-mail and other common office applications while waiting for repair services.

Since they clearly evolved into true "one stop" facilities, we changed the names of the centers from "PC Cubes" to "PC Service Centers." They offer the following services:

- Classroom-based PC installation or upgrade
- Productivity training
- Productivity stations

Our fourth phase included global rollout and standardization of the PC Service Center model. We now support 47 centers—20 in the Americas, 13 in Europe, and 14 in Asia. By the end of 2004, every major Intel site in the world will have a service center.

**Figure 1. During a gradually phased rollout beginning in 2002 and continuing today, the concept evolved from “PC Cubes” to today’s “PC Service Centers”**



## Changing Customer Expectations

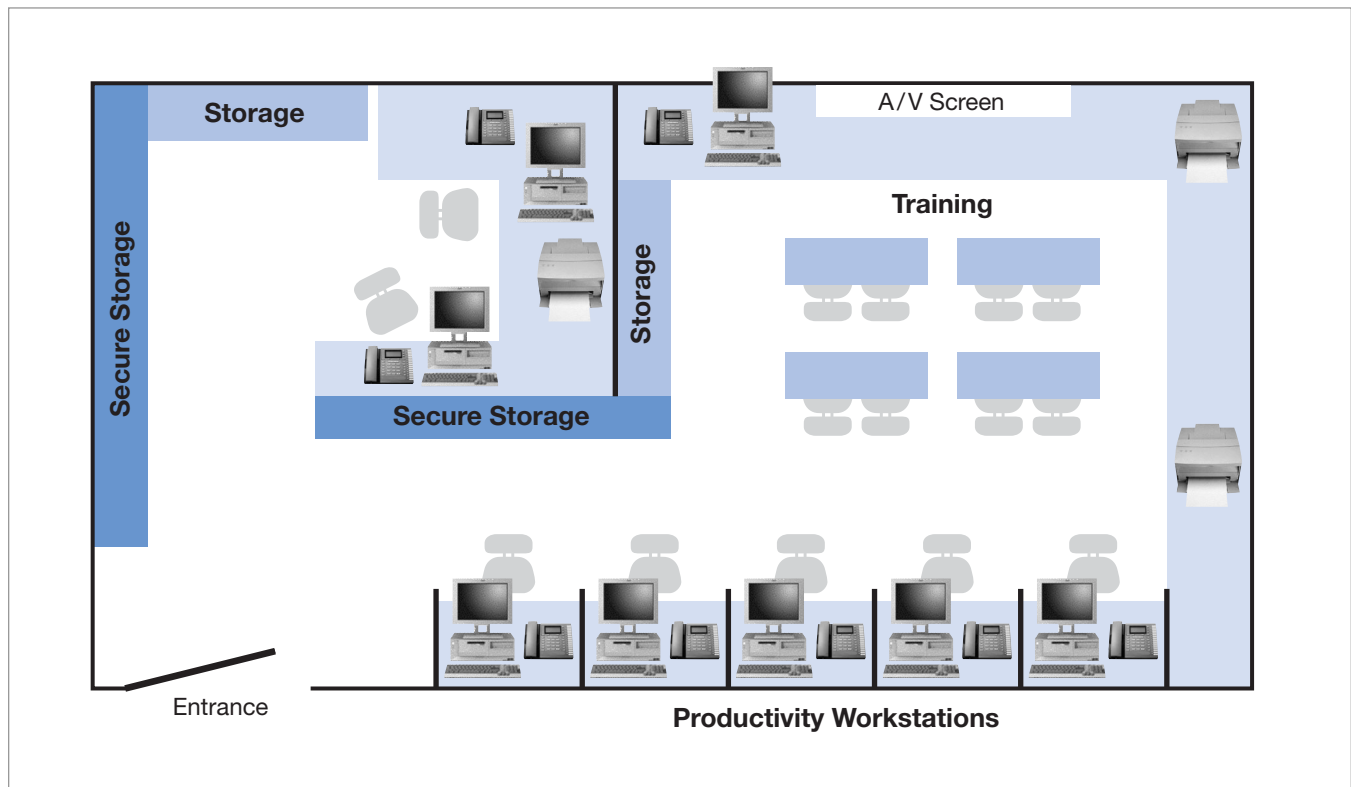
A look at our previous deskside process compared to today helps explain just how unique the new service centers are. When onsite users have technical problems with notebook systems at Intel, they first call our Global Contact Center. The center is responsible for resolving as many customer issues over the phone as possible.

In the past, call technicians escalated a problem by referring the customer to Deskside Services. Typically, the Deskside Services technician responded by contacting

the customer, scheduling an appointment, and then visiting the customer at deskside to resolve the problem.

Today, when a problem can't be resolved over the phone, we refer the customer to the nearest PC Service Center instead.

**Figure 2. A typical “large” PC Service Center configuration**



## Implementation

Our PC Service Center launch plan requires extensive preparation to choose an appropriate location, develop the space to suit local needs, and properly staff and market it.

### Find a Location

When we launched the first service centers, we carefully chose the initial locations by thoroughly investigating each potential site. Working with the candidate site's IT manager, we evaluated its customer needs and demographic makeup, including its population and support activity. We also evaluated its ratio of notebook to desktop PC users, since our centers primarily support notebooks.

We also considered existing support activity in and around the nominated site to ensure volume could sustain a service center. Originally, we looked for a sustainable ticket volume of 21 to 25 repair tickets per week, considering that a break-even point for a service center. Over time, we found that the desired range was actually a bit higher—28 to 35 tickets per week.

We tried to locate the service center in a well-traveled and clearly marked location so customers could easily find it.

### Identify Stakeholders

For a successful service center, both the implementation and the sustaining efforts require support from partner organizations within Intel. Early in the process, we identified stakeholders, such as call center support teams, location managers, supplier contract owners, human resources teams, and others, and reviewed possible impacts (and opportunities) of the new service.

### Develop the Physical Space

We designed two primary service center sizes:

- Large, with repair facilities for two technicians and an eight-to-twelve-seat classroom (see Figure 2).
- Small, with one or two technicians and limited classroom capacity

We remained flexible based on available space. More space meant that we could work on more systems concurrently, and that we could pull in additional technicians as needed if repair volumes rose.

For each new center, we work with Intel space planners to gather approvals for space assignment and to design an ergonomic and efficient layout with necessary storage capacity and physical security for the equipment. We ensured that we had technician desk space that was sufficient for several notebook systems and, if we anticipated a high service volume, tried to plan space for an additional technician. We initiated requests for signs, installation, network connections, analog test lines, and phones.

## **Market the Concept**

Since the service centers focus primarily on notebook systems, we felt that it was critical to develop marketing campaigns that set these expectations properly, prior to opening a new service center.

Our internal marketing group supplies a marketing plan describing when a new center will open, what services it will offer, how it will be staffed, and how customers could use and benefit from the new model. We use Intel's intranet, posters, and fliers to let customers know about the site.

Yet word of mouth has proved to be the best marketing tool of all. In fact, at some installations, word spread almost too fast and customers inundated the new centers.

## **Staffing**

We staff our service centers with contractors who've met our required levels of technical certification. We first identify the skill set according to a skills matrix and special requirements, determine the logistics (days and hours to be worked, location, start date), and submit a request to the appropriate supplier workforce manager.

Once hired, we give the new technicians Intel-specific training to immerse them in our culture and practices. And we train them in service center support practices. We also identify and train backup technicians to ensure seamless service delivery.

Generally, we staff a center with one full-time technician. If volumes are high, we call in a backup technician to assist. At some centers, consistently high volumes require two full-time technicians.

## **Tools and Equipment**

We supply technicians with needed software systems, and provide other tools they'll use in the centers, such as network switches and work desks. We work with supplier workforce managers to ensure technicians have appropriate network and application accounts.

The service center's project Web site serves as the main communication tool for project management, technician communication, and technical reference. It's available to everyone involved in the project and has become critical to a service center's daily operation.

## **Technical Readiness**

In launching a new center, we ensure that all technical support capabilities are ready at the start date, including:

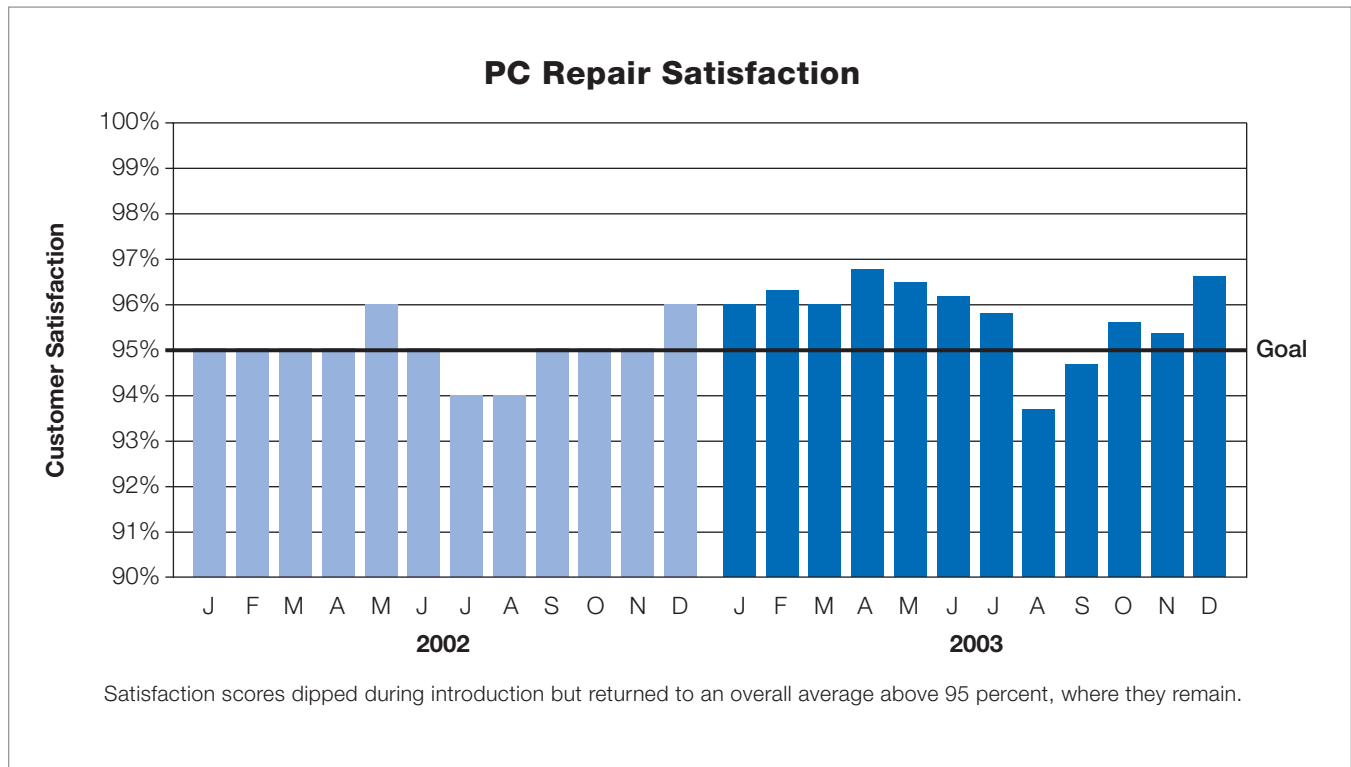
- Call center primed and ready, with scripts in place and the escalation process defined
- Service request system configured for new service location and technician
- All necessary training completed; technician has necessary accounts and tools
- Requested parts and supplies in locked cabinets, and technician and supervisor supplied with keys
- Network, analog line, and phones functional and in place
- Customer and project Web sites updated
- Technician start date confirmed

## **Coping with High Volume**

Once initiated, the new service centers' popularity grew rapidly, and volumes sometimes peaked uncontrollably. We've learned to ask customers to first contact the Intel call center by phone. Often, the call center can answer a question immediately or resolve the problem remotely, saving the customer a trip to the center.

New centers exhibit what we call a "dormancy effect"—sudden activity generated at launch. Employees may endure a bothersome but non-critical performance issue because they lack time to address it. Once they understand the speed and convenience of a local service center, however, they tend to take full advantage. Our most frequent customer request—one we've learned to brace for at a new center—is notebook battery replacements.

**Figure 3. Customer satisfaction scores within Intel in 2003, when the new centers were introduced, compared to 2002 scores**



## Measuring Success

Intel's philosophy is "better, faster, cheaper," and we followed it in setting goals. For our service center model to succeed, we determined that we needed to meet all three within 90 days of the start of each implementation phase. Early on, we used those criteria in weighing additional capabilities of the new model before adding them.

## Results

We've now launched 47 service centers at Intel facilities around the world, and the results have exceeded our expectations:

**Increased repair ticket resolution.** Resolution increased from an average of 15 per week at facilities without a service center, to more than 30 per week after the center opened.

**Technician productivity has increased.** Technicians are handling as much as three to four times that of the previous desktide service model, letting us reduce our technical repair staff in some cases.

**Fewer parts.** We've been able to streamline and condense our parts inventory, so that we're keeping fewer parts in stock at any one location.

**Rapid PC deployment and training.** Rather than performing individual PC upgrades, we now offer "classroom" PC deployments at service centers. We can simultaneously provide several customers with PC installation and upgrade guidance, along with productivity training, in the time it formerly took to deliver a single PC. This has reduced the volume of "how do I..." sorts of calls to our help centers.

**System tune-ups.** We've introduced a "health check," in which we perform simple services like keyboard cleanings that help prevent complex problems later. We also use the checkup service to help us measure the quality of deployed systems and plan upgrades.

**Better customer satisfaction.** We designed the PC Service Centers to maintain or increase customer satisfaction levels. After a short transition period (see Figure 3), customer satisfaction actually returned to above the goal as we expanded what the service centers offered. (We define "better" as "a higher level of customer satisfaction with our service as a whole.")



## **“Better”: Pleasing Customers**

The PC Service Centers have been a big hit with our customers, including those who are in and out of meetings all day, travel heavily, or use meeting transitions as work time. These customers verify that the service center can accommodate their request and walk to the service center, notebook computer in hand, during a break.

While the technician works, the customer can wait, attend another meeting, use one of the supplied productivity workstations to check e-mail, or visit the local cafeteria. Aside from occasional anomalies, such as parts shortages or events that impact the network, customer satisfaction with the PC Service Centers continues to be high.

## **“Faster”: Increased Technician Productivity**

In creating the service center model, our goal was to increase technician productivity by 5 percent or more over the older deskside model. Instead, we more than doubled it.

We wanted technicians to be “faster,” to handle customer repairs with greater efficiency and effectiveness. Since customers would now come to a PC Service Center, we expected

technicians would save travel time, letting them focus specifically on repairs without the usual interruptions. In addition, they could multitask, repairing several systems at once. Finally, technicians would have all the repair parts they needed at hand, saving trips to the stockroom for the right part.

It worked even better than we’d hoped. Technicians delivered shorter process times and quicker, more effective service to customers. We saw a huge improvement in efficiency; we increased the average number of repair ticket resolutions from 15 per week to more than 30.

Under the deskside model, a technician normally completed 21 to 25 tickets per week. Service center technicians now consistently complete 25 to 55 tickets per week, depending on demand.

## **“Cheaper”: Reduced Support Costs**

We measure the costs associated with every customer visit as the “unit cost of PC support and deployment.” We predicted that the higher productivity rates of the service centers would result in a 25 percent decrease in the “per ticket” cost—the cost to complete each discrete repair job.

## **Customer Comments on PC Service Centers**

“Everyone in the group was very friendly and helpful. The problem was immediately fixed, even though I was from out of the region. Really a great group!”

“Very good service, and done fast, as I needed [my notebook computer] for an important meeting the next day.”

“The technician was very professional. Furthermore, I personally observed [him] multi-tasking.... He was assisting three customers at once, and very efficiently at that.”

“I have once again been provided with a conscientious approach to an ad hoc request. Great service!”

“I got immediate attention, a very good explanation of the problem, and quick resolution. Thanks.”

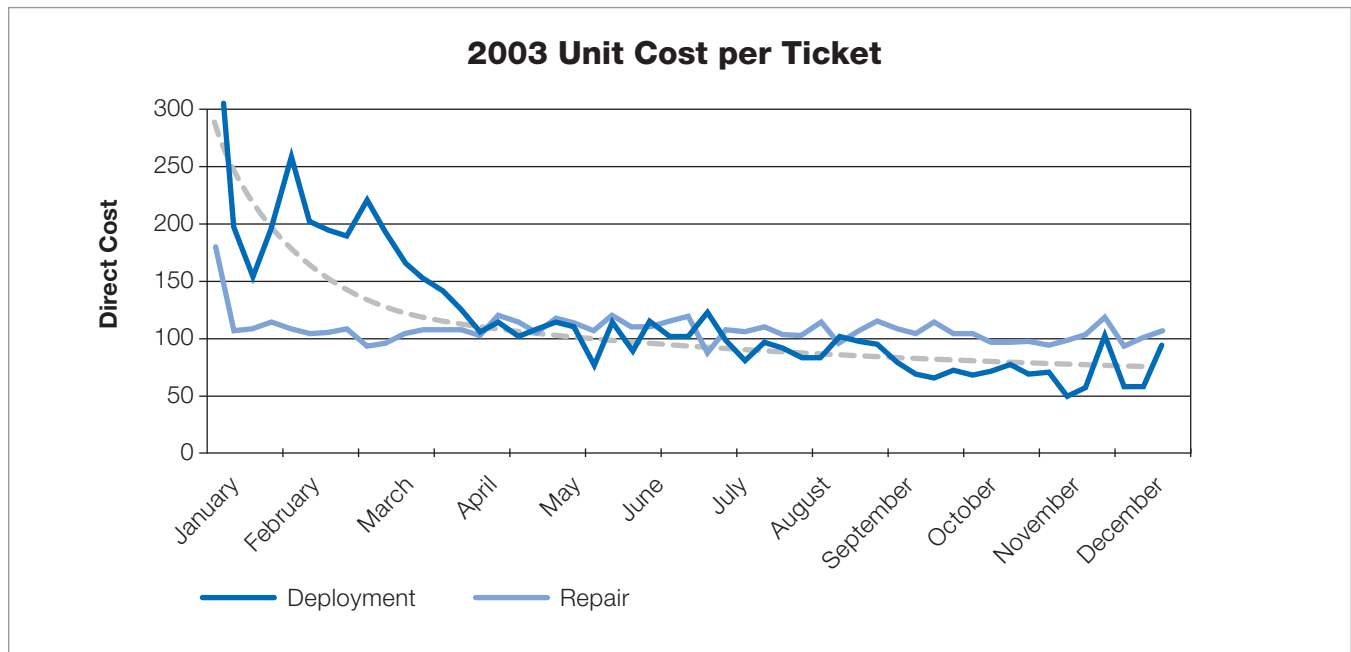
“I received very good service...they attended to my request immediately and solved it the same day. Additionally, the process was easy and user-friendly.”

“Very good work on involving and educating the laptop user on the migration process.”

“The overall service provided is excellent. The instructions were clear. Hope that this kind of PC refresh session can be maintained.”

“Prompt migration, glitch-free for my case. IT instructions simple to understand and follow. IT personnel are courteous and professional. GOOD JOB!”

**Figure 4. The 2003 global cost per ticket for deployment and repair**



As Figure 4 shows, we reduced the cost per ticket for both deployment and repair a total of 30 percent globally.

In 2003, we saved nearly \$1 million in PC deployment costs. Of that sum, approximately \$700,000 comes from reducing the cost of upgrading (“refreshing”) employees to new systems. The remaining \$300,000 comes from reduced PC repair costs.

As the program matures, we’ve evaluated an aggregate cost savings model that shows the savings we’re incurring, while taking into account the volume of traditional service displaced by the service centers.

As Figure 5 on the next page shows, the cost per unit to *repair* PCs began to drop with the introduction of the centers late in 2002. We saw spikes in unit costs when we expanded center capabilities, but costs overall trended down.

Supporting notebook PCs instead of desktop PCs became vastly more efficient with the new model. As Figure 6 on the next page shows, the cost per unit to *deploy* PCs also dropped. But the desktop line drops at a slower rate, a factor of the decreasing number of desktop systems at Intel and the increasing complexity of their support.

## Improved Parts Inventory

The service centers let us consolidate our inventory, one of the project’s most significant impacts. In the traditional deskside process at Intel, we kept replacement parts at a centralized location and distributed them to core technicians as needed.

The new model bases the service center’s stock inventory on an estimated volume of visitors. Each cubical stores just enough parts to eliminate the delivery time typically associated with field repairs. Having the correct inventory of replacement parts readily available in the service center speeds repair turnaround.

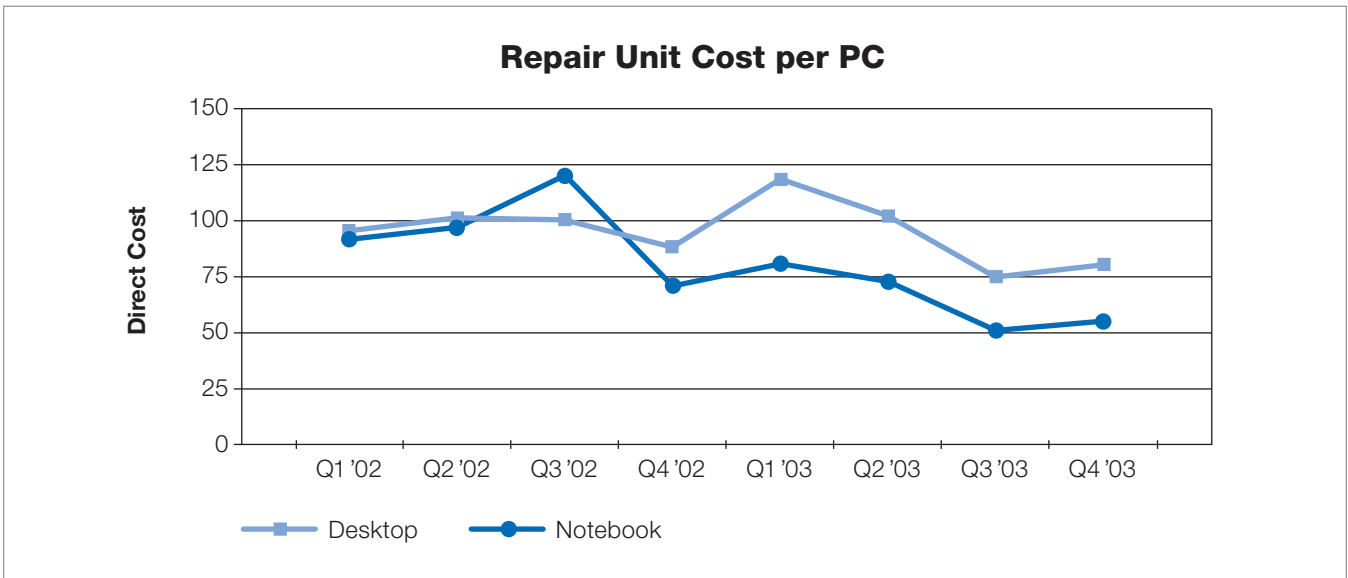
When a part is used, it’s immediately reordered. We batch orders and process them at the end of the day for delivery the next morning, giving the technician ample stock to quickly assist customers.

However, the distributed inventory model has its own challenges. A center may experience parts outages due to delivery delays, or an unanticipated spike in the number of visits. We now closely monitor inventory levels at each center.

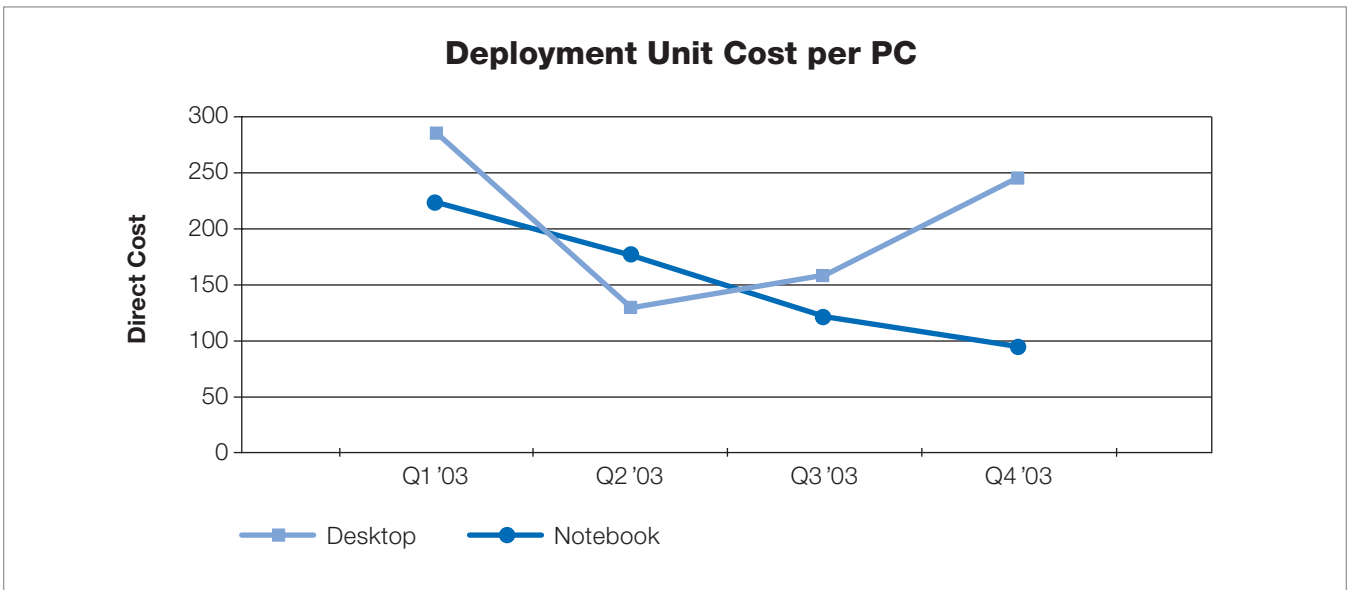
A daily parts report guarantees that the project team is warned and can act before a shortage occurs. If a part inventory falls below a preset threshold, the system automatically notifies the appropriate person, with escalation paths planned if certain flags are triggered.

This reporting system provides a growing historical database of parts demand, reducing parts outages to almost zero.

**Figure 5. Cost per unit to *repair* PCs began to drop with the introduction of the centers**



**Figure 6. Cost per unit to *deploy* PCs also dropped with the introduction of the centers**



## Increased Performance to Goal

Although we didn't initially identify an improvement in performance to goal as a criterion for success, we added new services to the centers and average performance rates rose to considerably higher than with desktside services.

Performance-to-goal comparisons show the centers' performance averaging 90 percent of our performance goals or better. The performance-to-goal success was twofold: we completed more customer tickets over the same time, and customers had greater control over when they received service.

## Challenges

### Educating Customers

Changing customer expectations about how Intel IT would install, upgrade, or repair their systems proved to be a major challenge. Our efforts at overcoming expectations moved slowly at first, but eventually, it became a selling point that we could repair or upgrade customers' computers at their convenience. With each new center, once customers understood the premise, it quickly spread through word of mouth, and service center visits increased.

### Working with the Service Provider

We work with an outside service provider for internal IT customer service, and we also had to change their perceptions and expectations. We brought our service supplier into the process at a very early stage, which helped us influence and control both the project's implementation and its success.

## Conclusion

Rather than simply reduce technicians and thus services, Intel IT's Global PC Services (GPCS) group has developed a new way of serving customers. Once we overcame the challenge of educating workers about the new service, the positive influx of eager customers has overwhelmed us at some sites.

Offering notebook and desktop support service through an easily available service center, and asking customers to visit these centers, has increased our ability to provide flexible service. Overall, we've more than achieved our goals of providing better, faster, and cheaper internal IT support services at Intel.

### Acronyms

<b>GPCS</b>	Global PC Services
<b>NICs</b>	network interface cards

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